

## **REMARKS**

In the Office Action mailed on December 2, 2004, claims 1-26, 41-65, 67, 68 and 70-81 were pending. Claims 41-65, 67, 68 and 70-81 were allowed, and claim 13 was objected to. Claims 1-12 and 14-26 were rejected.

Claims 1 and 13 have been amended. The proposed amendments do not contain new matter. The subject matter of the amendments can be found in the originally filed specification and in the originally filed claims, among other places. Applicants respectfully request admission of the amended claims 1 and 13.

### **I. Rejection under 35 U.S.C. §102**

#### **A. Rejection over U.S. Patent No. 5,811,192 ("Takahama")**

In the Office Action at page 2, claims 1-10 and 21 were rejected under 35 U.S.C. §102(e) as being anticipated by Takahama. Applicants respectfully traverse this rejection.

#### **1. The Present Invention**

The present invention as recited in amended claim 1 is a photocatalytically-activated self-cleaning article of manufacture comprising: a substrate having at least one surface; and a photocatalytically-activated self-cleaning coating comprising a combination of anatase phase and amorphous phase of titanium dioxide deposited over the surface of the substrate at a thickness of less than 1,000 Angstroms by a process selected from the group consisting of chemical vapor deposition, magnetron sputtered vacuum deposition and spray pyrolysis.

## **2. Takahama**

Takahama discloses a substrate of which the surface is coated with a titanium dioxide film having a photocatalytic activity, which substrate is obtained by: depositing titanium dioxide in a film form on a surface of a substrate by contacting the substrate with a reaction solution containing ammonium titanium fluoride, water and an additive.

## **3. Traversal of the Rejection**

To anticipate a claim, a single source must contain all of the elements of the claim. See Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). The present invention as recited in amended claim 1 is a photocatalytically-activated self-cleaning article comprising a substrate having at least one surface; and a photocatalytically-activated self-cleaning coating comprising a combination of anatase phase and amorphous phase of titanium dioxide deposited over the surface of the substrate. Takahama does not contain any disclosure as to what phase or phases of titania is on the surface and hence does not anticipate the invention as recited in amended claim 1. As a result, Applicants respectfully request the withdrawal of the rejection of amended claim 1.

Claims 2-10 and 21 directly or indirectly depend on claim 1 and recite the present invention in varying scope. There is nothing in Takahama that teaches or discloses the invention as recited in claim 1, as further limited by claims 2-10 and 21. As a result, claims 2-10 and 21 are not anticipated by the reference of record, and Applicants respectfully request the withdrawal of this rejection.

## **B. Rejection over U.S. Patent No. 5,830,252 (“Finley”)**

In the Office Action at page 3, claims 1, 2, 4-6, 10 and 21 were rejected under 35 U.S.C. § 102(e) as being anticipated by Finley. Applicants respectfully traverse this rejection.

### **1. Finley**

Finley discloses amorphous metal oxide barrier layers of titanium oxide, zirconium oxide and zinc/tin oxide having a thicknesses below 180 Angstroms.

### **2. Traversal of the Rejection**

The rule for a proper § 102 rejection is shown above. The present invention as recited in amended claim 1 is a photocatalytically-activated self-cleaning article comprising a substrate having at least one surface; and a photocatalytically-activated self-cleaning coating comprising a combination of anatase phase and amorphous phase of titanium dioxide deposited over the surface of the substrate. Finley does not contain any disclosure as to what phase or phases of titania is on the surface and hence does not anticipate the invention as recited in amended claim 1. As a result, Applicants respectfully request the withdrawal of the rejection of amended claim 1.

Claims 2, 4-6, 10 and 21 directly or indirectly depend on claim 1 and recite the present invention in varying scope. There is nothing in Finley that teaches or discloses the invention as recited in claim 1, as further limited by claims 2, 4-6, 10 and 21. As a result, claims 2, 4-6, 10 and 21 are not anticipated by the

reference of record, and Applicants respectfully request the withdrawal of this rejection.

#### **B. Rejection over U.S. Patent No. 6,238,738 (“McCurdy”)**

In the Office Action at page 3, claims 1-6, 10-12, 14-18 and 21-26 were rejected under 35 U.S.C. § 102(e) as being anticipated by McCurdy.

##### **1. McCurdy**

McCurdy discloses a chemical vapor deposition process for laying down a tin or titanium oxide coating on a glass substrate through the use of an organic oxygen-containing compound and the corresponding metal tetrachloride. The resulting article has a tin or titanium oxide coating which can be of substantial thickness.

##### **2. Traversal of the Rejection**

The rule for a proper § 102 rejection is shown above. The present invention as recited in amended claim 1 is a photocatalytically-activated self-cleaning article comprising a substrate having at least one surface; and a photocatalytically-activated self-cleaning coating comprising a combination of anatase phase and amorphous phase of titanium dioxide deposited over the surface of the substrate. McCurdy does not contain any disclosure as to what phase or phases of titania is on the surface and hence does not anticipate the invention as recited in amended claim 1. As a result, Applicants respectfully request the withdrawal of the rejection of amended claim 1.

Claims 1-6, 10-12, 14-18 and 21-26 directly or indirectly depend on claim 1 and recite the present invention in varying scope. There is nothing in McCurdy that teaches or discloses the invention as recited in claim 1, as further limited by claims 1-6, 10-12, 14-18 and 21-26. As a result, claims 1-6, 10-12, 14-18 and 21-26 are not anticipated by the reference of record, and Applicants respectfully request the withdrawal of this rejection.

## **II. Rejection under 35 U.S.C. § 103**

In the Office Action at page 4, claims 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over McCurdy. The Examiner alleges that McCurdy does not give a range of thicknesses of the sodium ion diffusion barrier that is used, but such would be obvious to one of ordinary skill in the art absent a showing of unexpected results.

For a proper rejection under 35 U.S.C. § 103, the PTO must satisfy Three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See Amgen, Inc., 927 F.2d 1200, 1209, 18 U.S.P.Q.2d 1016, 1023 (Fed Cir. 1991). Lastly, the prior art reference or combination of references must teach or suggest

all the limitations of the claims. See In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Claims 19 and 20 depend directly or indirectly from amended claim 1 and recite the invention in varying scope. McCurdy does not teach a photocatalytically-activated self-cleaning article comprising a substrate having at least one surface; and a photocatalytically-activated self-cleaning coating comprising a combination of anatase phase and amorphous phase of titanium dioxide deposited over the surface of the substrate as recited by claims 19 and 20. McCurdy does not contain any disclosure as to what phase or phases of titania is on the surface. As a result, Applicants respectfully request the withdrawal of this rejection.

### **III. Claim 13**

In the Office Action at page 4, claim 13 was objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 13 has been rewritten in independent form including all of the necessary limitations. As a result, Applicants respectfully request the withdrawal of this objection.

### **IV. CONCLUSION**

In light of the amendments and remarks presented in this correspondence,

Applicants respectfully request the withdrawal of the objection to claim 13 and the following rejections: the rejection of claims 1-10 and 21 under 35 U.S.C. § 102(e) as being anticipated by Takahama; the rejection of claims 1, 2, 4-6, 10 and 21 under 35 U.S.C. §102(e) as being anticipated by Finley; the rejection of claims 1-6, 10-12, 14-18 and 21-26 under 35 U.S.C. § 102(e) as being anticipated by McCurdy; and allowance of claims 1-26.

If any questions remain about this application, the Examiner is requested to contact Applicants' attorney at the telephone number provided below. Thank you.

Respectfully submitted,

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